

Stressed receiver conformance signal for 100GBASE-SR4

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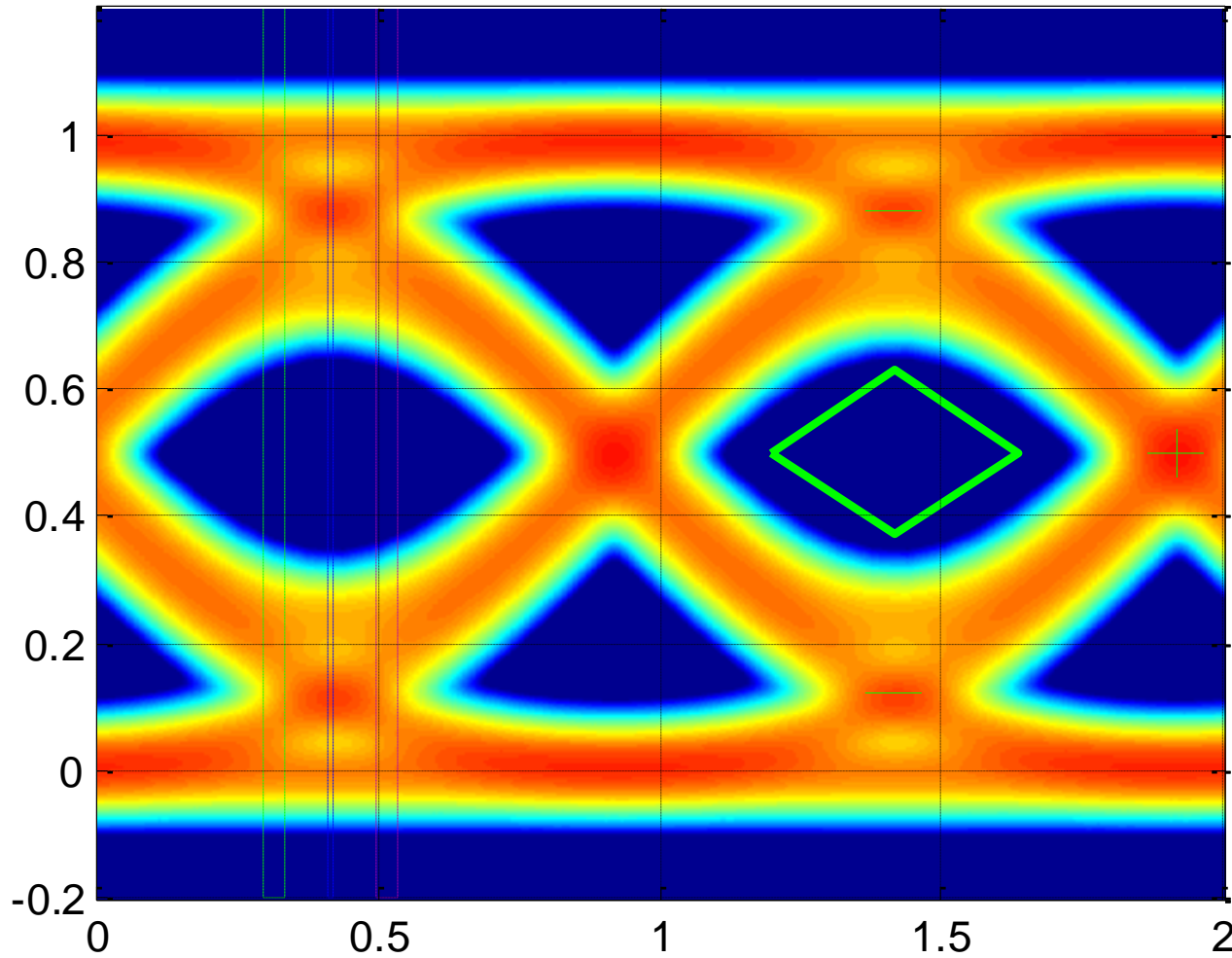
- It seems that the recipe for stressed receiver conformance signal generation is not feasible
 - Cannot generate 2/3 of the penalty from a reasonable filter alone while creating as much jitter as D3.1 requires
- The VECP value of 4.2 and the TxVEC value of 5 are not consistent with each other
 - It is proposed that the VECP based calibration will be replaced by TxVEC based calibration, for better consistency in the spec and reduced measurement uncertainty
 - TxVEC value is under review (see comments 30, 70, 71, dawe_02_0914_optx, petrilla_01_0914_optx)
- The definition of TxVEC for stressed receiver conformance signal needs to be agreed
 - Should noise term M be set to 0 or not?
 - This will affect the value in Table 95-7
- This presentation shows some simulations to see what is reasonable
- Aim to give gives revised values for TxVEC, J2, J4 of the stressed receiver conformance signal
 - Related to some of these comments:
 - SRS setup 73 9 28 83 84 85 90 91 95
 - TxVEC including M? 30 43 87
 - Mask hit ratio 74 35 81 92

Example worst case eye at ideal TP3a from model parameters:

TxVEC19(M=0) ~3.4 dB



TxVEC 3.879, TxVEC no M 3.398, VECP 5.229, J2 0.299, J4 0.43



Parameter	Simulated	SRS target	Unit	Comment
TxVEC	3.9	<=5	dB	
TxVEC(M=0)	3.4	No spec	dB	
VECP	5.2	4.2	dB	No scope noise
% from filter	?%	>=66.7	%	
J2	0.30	0.41	UI	
J4	0.43	0.55	UI	
Pulse shrinkage	0.077	No spec		
PJ	0.06 & 0.14	0.05	UI	Following petrilla_01_0914
Gaussian noise	0.0620	No spec	/(OMA/2)	Following link model

Using example model parameters

Transmitter and fibre: Gaussian filters. Receiver: 19.34 GHz BT4

No scope noise

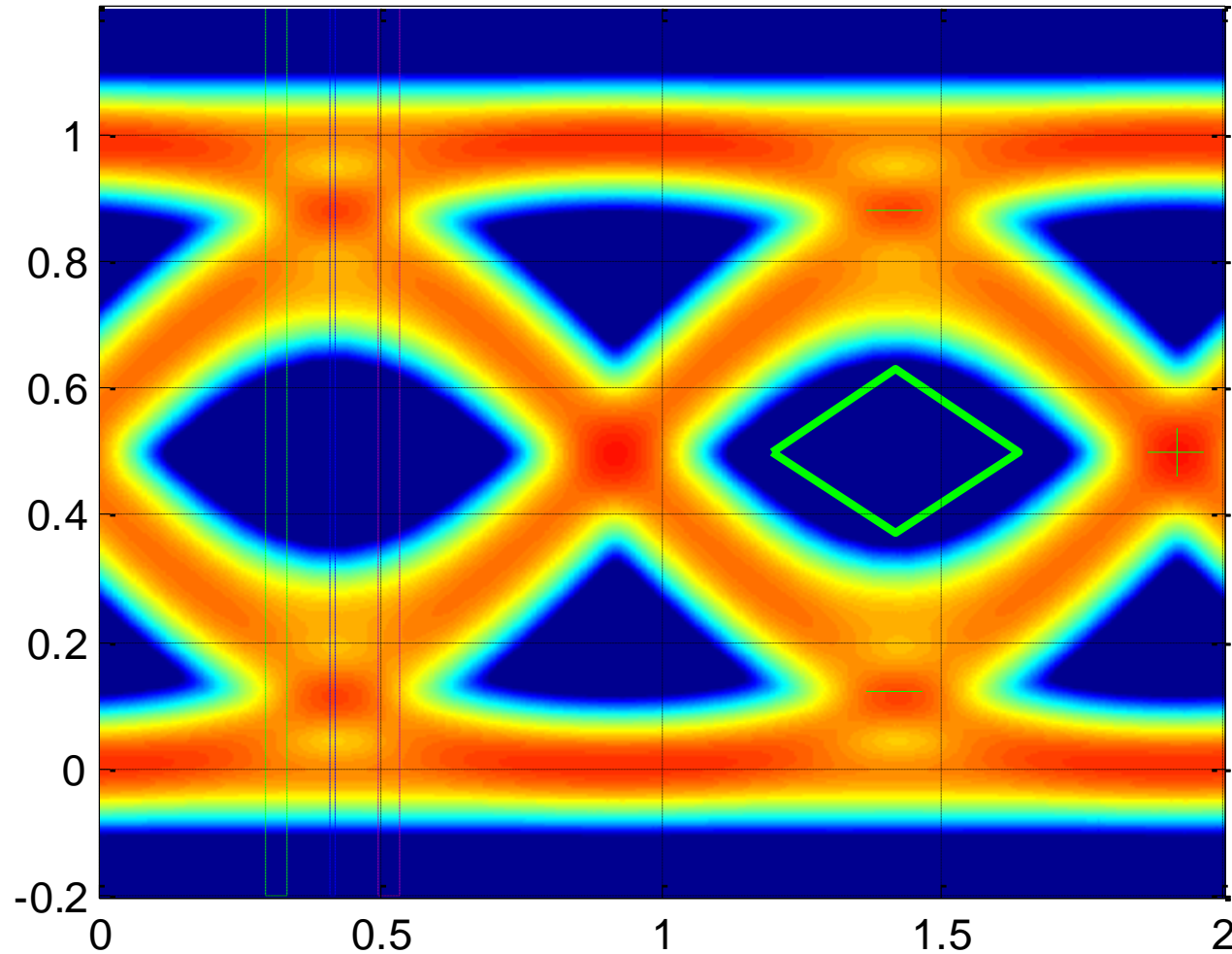
DCD implemented as EOJ

Periodic jitter (2 frequencies): 3/4 of time deviations at the extremes

Noise: RIN as spreadsheet, MN as D3.1, MPN as spreadsheet

Example worst case eye at TP3a from model parameters inc. scope noise: TxVEC19(M=0) ~3.4 dB

TxVEC 3.876, TxVEC no M 3.396, VECP 5.315, J2 0.305, J4 0.44



Parameter	Simulated	SRS target	Unit	Comment
TxVEC	3.9	<=5	dB	
TxVEC(M=0)	3.4	No spec	dB	
VECP	5.3	4.2	dB	With scope noise
% from filter	?%	>=66.7	%	
J2	0.31	0.41	UI	
J4	0.44	0.55	UI	
Pulse shrinkage	0.077	No spec		
PJ	0.06 & 0.14	0.05	UI	Following petrilla_01_0914
Gaussian noise	0.0620 & 0.0085	No spec	/(OMA/2)	Following link model

17 uW scope noise, signal at +3 dBm

Using example model parameters

Transmitter and fibre: Gaussian filters. Receiver: 19.34 GHz BT4

DCD implemented as EOJ

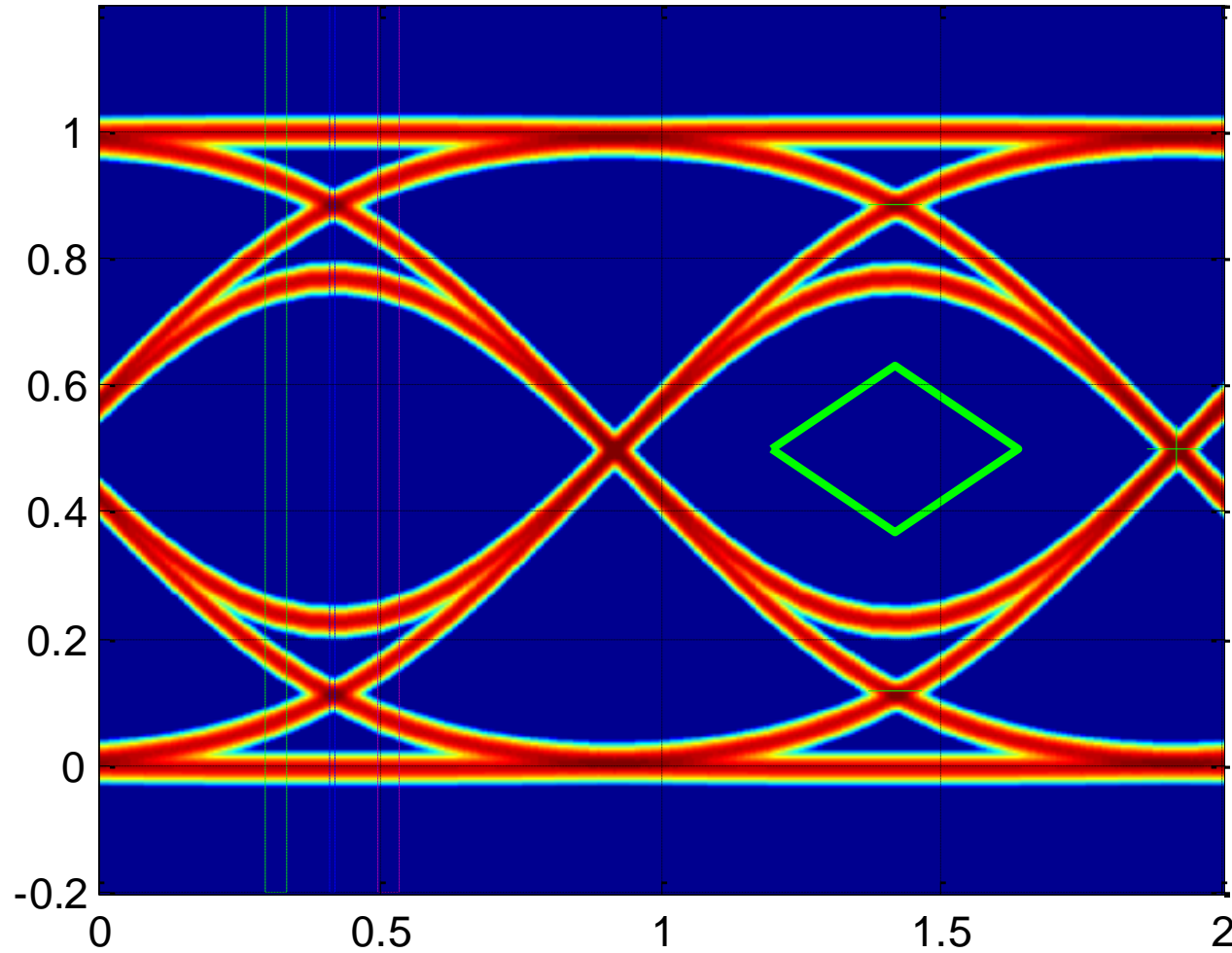
Periodic jitter (2 frequencies): 3/4 of time deviations at the extremes

Noise: RIN as spreadsheet, MN as D3.1, MPN as spreadsheet

Example worst case eye at ideal TP3a from model parameters: no jitter or noise. TxVEC19(M=0) ~2.5 dB



TxVEC 2.818, TxVEC no M 2.511, VECP 3.191, J2 0.0578, J4 0.0857



Parameter	Simulated	SRS target	Unit	Comment
TxVEC	2.8	No spec	dB	
TxVEC(M=0)	2.5	No spec	dB	
VECP	3.2	$\geq 4.2^{2/3}$ $= 2.8$	dB	
% from filter	50%	≥ 66.7	%	
J2	0.06	0.41	UI	
J4	0.09	0.55	UI	
Pulse shrinkage	0.017	No spec		
PJ	0	0	UI	
Gaussian noise	0.0085	No spec	$/(OMA/2)$	Scope noise

Using example model parameters

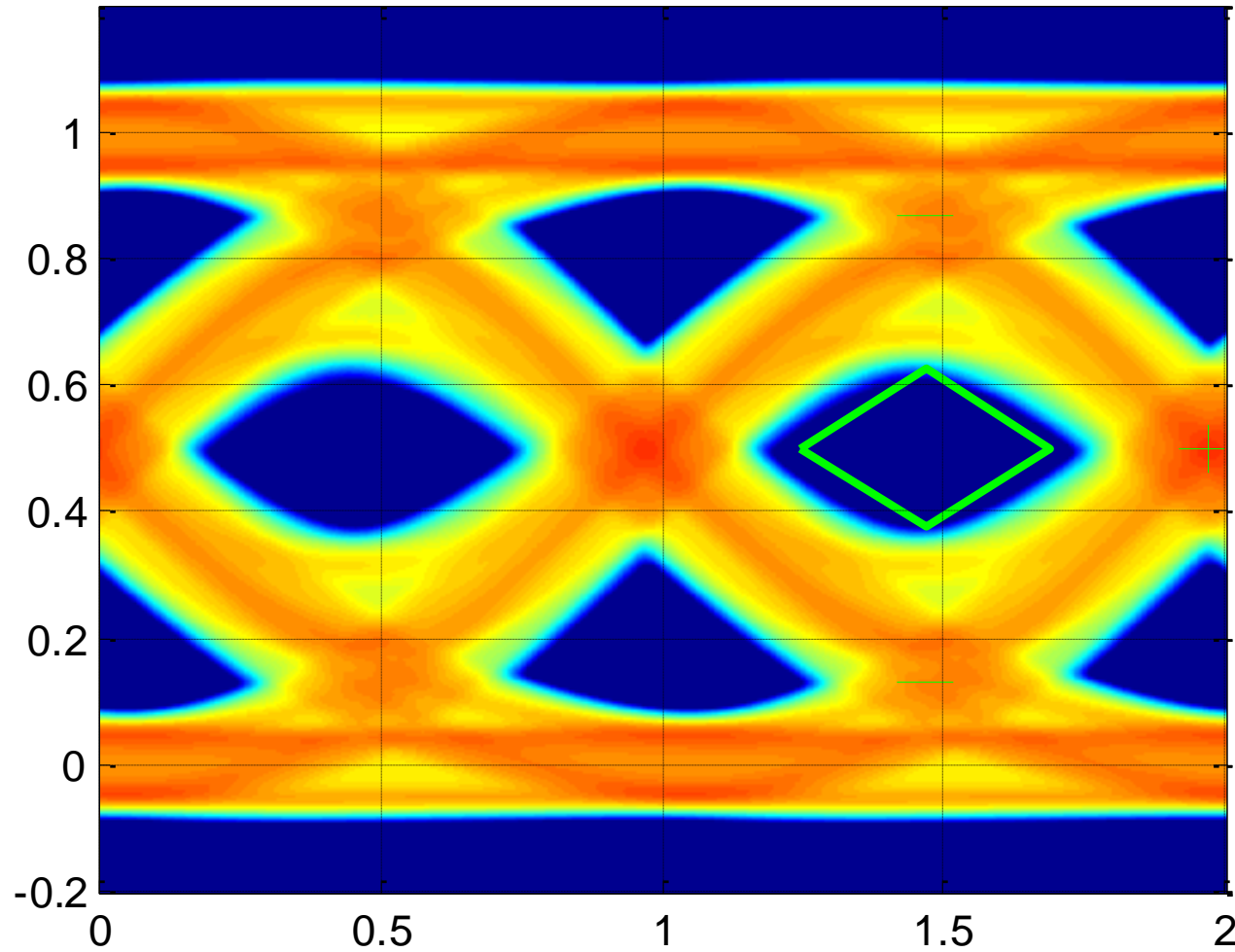
Transmitter and fibre: Gaussian filters. Receiver: 19.34 GHz BT4

17 uW scope noise, signal at +3 dBm

Example stressed eye: TxVEC19(M=0) ~ 4.7 dB



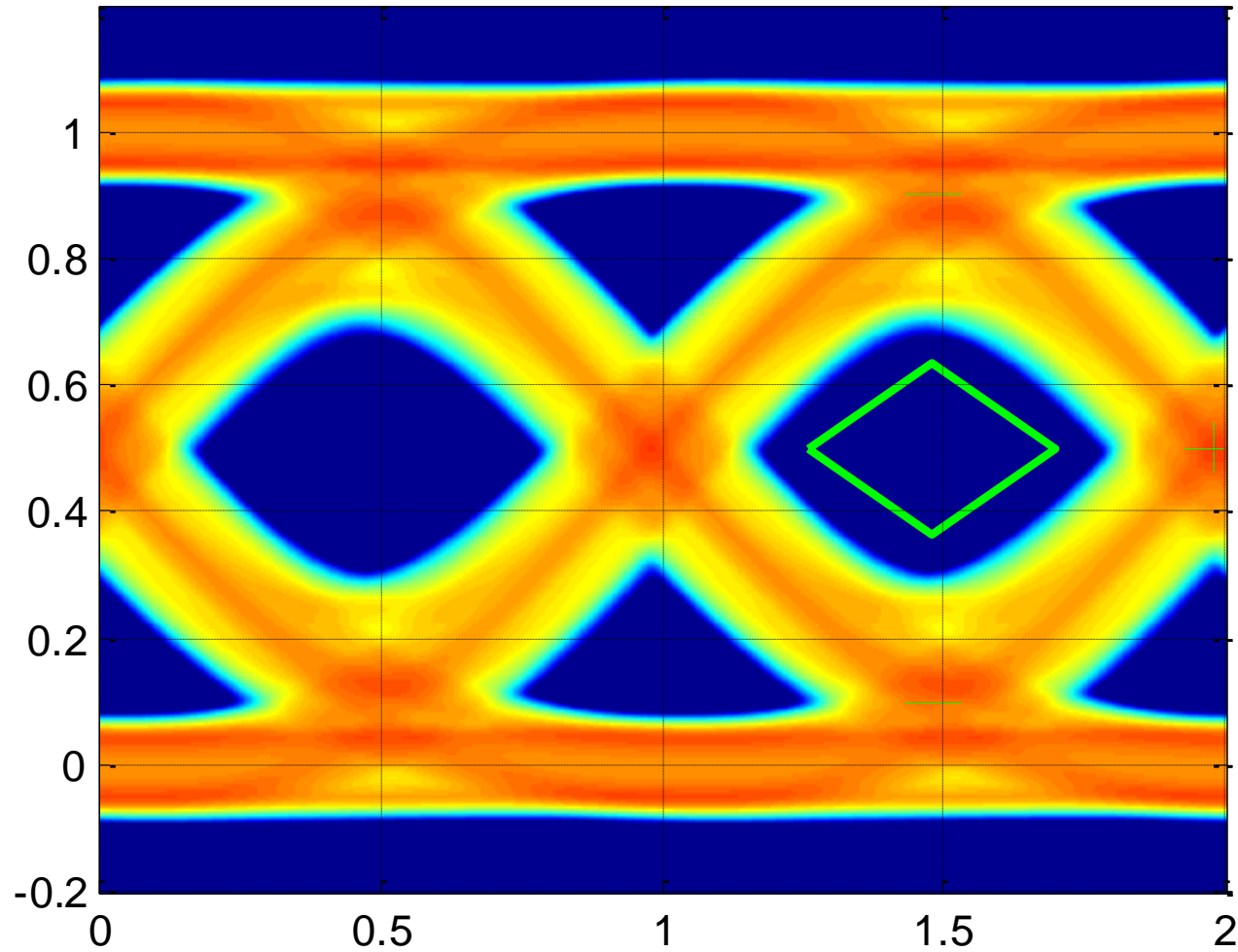
TxVEC 5.74, TxVEC no M 4.74, VECP 6.09, J2 0.385, J4 0.512



Parameter	Simulated	D3.1 target	Unit	Comment
TxVEC	5.7	≤ 5	dB	Target is too high
TxVEC(M=0)	4.7	No spec	dB	
VECP	6.1	4.2	dB	Target is too high? Measurement affected by scope noise
% from filter	61%	≥ 66.7	%	Target is too high
J2	0.38	0.4	UI	Target is too high
J4	0.51	0.55	UI	Target is too high
Pulse shrinkage	More than half?	No spec		
SJ	0.15	0.05	UI	Target is too low?
J(SI1)	0.1	≤ 0.1	UI	All shrinkage
GJ	0.035	No spec		High bandwidth, "half" shrinkage
Filter 2 type	BT4	No spec	GHz	
BW2	8.7	No spec	GHz	
SI2	0.11	No spec	(pk-pk) / OMA	

Example stressed eye: VECP = 4.2 dB

TxVEC 3.35, TxVEC no M 2.96, VECP 4.18, J2 0.341, J4 0.45



Parameter	Simulated	D3.1 target	Unit	Comment
TxVEC	3.3	≤ 5	dB	Target is too high
TxVEC(M=0)	3.0	No spec	dB	
VECP	4.2	4.2	dB	Target is too high? Measurement affected by scope noise
% from filter	61%	≥ 66.7	%	Target is too high
J2	0.34	0.4	UI	Target is too high
J4	0.45	0.55	UI	Target is too high
Pulse shrinkage	60%	No spec		
SJ	0.15	0.05	UI	Target is too low?
J(SI1)	0.1	≤ 0.1	UI	All shrinkage
GJ	0.035	No spec		High bandwidth, "half" shrinkage
Filter 2 type	BT4	No spec	GHz	
BW2	10.3	No spec	GHz	
SI2	0.11	No spec	(pk-pk) / OMA	

Thank You

